

A CROCODYLIAN FOSSIL FROM LANSDOWNE STATION.

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(Plates XXV–XXVI, Figure 1.)

DURING the course of excavating a large "tank" at Lansdowne Station, near Tambo, South-Central Queensland, in June, 1924, Messrs. Brace Brothers, contractors, discovered fossil remains to which some prominence was given in the Press. Mr. J. Armstrong, then manager of Lansdowne, kindly informed me that these were exposed by heavy plough and scoop work and extended over an area of about 40 ft., being embedded in clay overlying soft sandstone. As a result of correspondence, these remains were forwarded by Mr. F. Jack Brace, who generously donated them, on behalf of Messrs. Brace Brothers, to the Queensland Museum.

The great majority of the fossil fragments consisted of bones of two gigantic extinct kangaroos. Unfortunately no one of these bones, except a sacrum, is complete, but the fragments agree with material from the Darling Downs recognised here as *Palorchestes azael* and *Macropus anak*.

The most important specimen is the major portion of a large cranium, which is evidently conspecific with the extinct crocodylian from the Darling Downs described by De Vis as *Pallimnarchus pollens*.¹

Locality.—From information kindly supplied by Mr. L. E. Ball, B.E., Government Geologist, I am able to record the actual location of the tank, which is in the south-western part of portion 5 of parish of Metowra, about seven miles south-west of Metowra (Lansdowne) homestead, and about three miles west of the Ward River.

Mr. Ball, who saw the fossils at Tambo in December last, was informed that the majority of the bones were found within six feet of the surface, but that the cranium itself was unearthed at a depth of twelve feet.

Matrix.—The matrix in which the cranium was forwarded may be defined as a slightly ferruginous, calcareous, pebbly silt, containing clay iron-stone concretions. In this the cranium was lying with the palatal surfaces exposed. In the cavities several pebbles were found and the majority of these, with those in the matrix, were somewhat rounded. Small quantities of a very fine-grained, slightly ferruginous sandstone were present, and it seems probable that the underlying material mainly consisted of this.

The occurrence of the marsupial remains and this extinct crocodile so far to the north-west of the Darling Downs area is of special interest.

¹ De Vis, Proc. Roy. Soc. Qld., Vol. II, pp. 181-191, Plates X-XIV, 1886.

Mr. Ball informs me that the marine series was considered to extend southward across the Lansdowne country. These fossils are, however, a record of relatively recent freshwater deposits far within the borders of our extensive Cretaceous formation. Possibly these deposits at Lansdowne represent a filled-in valley, or an earlier course of the Ward River, formed in late Tertiary times in the uplifted floor of our vast Cretaceous sea.

As the cranium is the first fairly complete specimen to be received of this extinct crocodilian, additional interest is attached to the Lansdowne fossils.

PALLIMNARCHUS POLLENS De Vis.

Unfortunately the cranium was received in a fractured condition, the deposit not being suitable for good preservation. On exposure to the air the palatal and superior cranial surfaces were found to be very crumbly, and it was necessary to impregnate the whole cranium with an adhesive solution. In this process some of the sutures were perhaps made more obscure.

The cranium is complete to the posterior border of the frontal, with a length of 485 mm., and on the left-hand side a portion of the postfrontal (postorbital) is preserved. The superior surface is somewhat depressed in the posterior region of the nasals owing to pressure and partial fracture during fossilisation.

The specimen is of the brevirostrine type, and but for the presence of large premaxillo-maxillary notches it would be almost caimanoid in superior view. The external narial aperture is circular and is not divided by processes from the nasals. The sculpturing is moderate throughout the superior surface, but is deepest in the region between the anterior borders of the orbits. There are no longitudinal ridges as in *C. porosus*, and although the inner borders of the orbits are raised and thickened they are not prominently ridged.

In the plane of the superior surface of the cranium there is a decided concavity behind the premaxillaries, and as may be seen from Plate XXV, Fig. 2, the sides of the maxillaries are very prominently festooned.

Dentition.—As only one functioning tooth is complete *in situ*, the dentition is principally described from alveolar remains. Each premaxillary contains five teeth. The two anterior are relatively small and are set near to the border; then follow two enlarged teeth, those on the right side attaining 25 mm. at the alveolar border; behind these, in the inward curve of the large notch, is a smaller tooth. Close to the median line and immediately behind the two anterior teeth is a deep recess for the accommodation of the anterior mandibular tooth.

Each maxillary contains fourteen teeth. The fourth is predominantly enlarged, attaining a diameter at the base of 30 mm.; this tooth marks the maximum of the descending festoon behind the notch. The three anterior

teeth are subequal, and the three teeth subsequent to the enlarged fourth are smaller than the average; the tenth and eleventh are slightly larger than the average in the remainder of the series.

The dental arcade terminates in front of the orbits,¹ and this characteristic, as pointed out by Mook,² is a sign of maturity.

Detached Teeth.—Fragments representing a dozen teeth were forwarded with the cranium. These exhibit great variation, as is usual with crocodylians, and range from a large conical "canine," with a diameter of 27 mm., to small teeth only 9 mm. A single complete tooth is cylindrical, with a length of 60 mm. (enamel portion 15) and a diameter of 17 mm. Several of the fragments are laterally compressed, with prominent anterior and posterior carinæ. The enamel surface is minutely rugose.

Palatal Surface.—Owing to the badly fractured condition of the bones forming the palate, the exact course of the sutures between the premaxillaries and the maxillaries cannot be satisfactorily traced; the suture apparently crosses the palate in a fairly straight line about 55 mm. behind the premaxillary foramen, this being approximately in the central line of the notches. Similar difficulties prevent a definite record of the suture between the palatine and maxillary elements, but from the antero-internal border of the palatine fenestræ it apparently goes forward obliquely to a point opposite the eighth maxillary tooth and then crosses to the median suture in a nearly straight line. The posterior region of the palatines is too much broken up to yield definite evidence.

Fenestræ.—The palatine fenestræ are large sub-oval vacuities, attaining at least 70 mm. in maximum breadth, this being nearly opposite the penultimate tooth. As in *C. porosus*, more than half of the lateral borders of these fenestræ are composed of the transpalatines or ectopterygoids, but as the posterior margins are incomplete these proportions cannot be more accurately stated.

The premaxillary foramen is much wider than long, and sufficient of its anterior edge is preserved to show that it is transversely oval, the dimensions being approximately 30 by 15 mm. Owing to the supporting plasticine, this foramen is partly obscured in Plate XXVI, Fig. 1.

Superior Surface.—The premaxillaries are broad and symmetrically convex bones and they extend well beyond the external narial aperture. Their maximum diameter is 165 mm., which is about two-fifths greater than their minimum length. The premaxillo-maxillary suture curves backward from the notch on each side until it reaches the mid-region of each element; then it curves forward to meet the nasals about 20 mm. from the external nares. This, as noticed by De Vis (*loc. cit.*) is an unusual characteristic in crocodylians,

² C. C. Mook, Bull. Amer. Mus. Nat. Hist., XLIV, 1921, p. 61.

the premaxillaries in most species having prolonged posterior processes adjoining the nasals. Two premaxillary fragments from Darling Downs deposits have been partly utilised in tracing these sutures.

The external narial aperture is sub-circular in form, with a length of 59 mm. and a breadth of 52 mm.

The nasals are 255 mm. in length and attain a breadth of 52 mm. They reach, but do not penetrate, the external narial aperture (which has no bony septum), and in this region they are very narrow. The course of the sutures is somewhat obscure in places, but it is evident that the nasals rapidly widen and that for about two-thirds of their length they are at least 50 mm. wide. Posteriorly they terminate in acuminate processes which meet the frontal wedge.

The frontal is imperfect posteriorly, but the bone is at least 110 mm. in length. The anterior process is abruptly acuminate, 55 mm. in length, and terminates 15 mm. in front of the orbits. The interorbital region is very concave, being 17 mm. below the plane of the ridges in the mid-region. The minimum interorbital diameter is 66 mm. Unfortunately the sutures between the prefrontals and lacrymals and between the lastnamed and the jugals cannot be satisfactorily traced, but there appear to be no special characteristics.

The orbits are very incomplete posteriorly; their maximum breadth is less than the interorbital diameter.

Original Type Material.—In his description of *Pallimnarchus pollens* De Vis used material from at least four specimens, and his associated registered material included fragments now recognised as belonging to *Crocodylus Nathani* (*loc. cit.*). The fragments from the frontal region described and figured by De Vis (Plate XIV, Fig. 2), in which the interorbital space is quite flat, evidently represent a species as yet unknown and for the elucidation of which more material is necessary. The left premaxillary described by De Vis is almost identical in general dimensions with the Lansdowne cranium.

The salient feature of the mandibular elements, which formed the principal part of De Vis' material, is the very broad symphysis, which terminates opposite the posterior border of the fifth tooth.

De Vis also stressed the significance of the flat, bevelled anterior edge of the associated body scutes, following Huxley's observations (Proc. Linn. Soc. Lond., IV, 1860, p. 21), as characteristic of the Alligatoridæ rather than of the Crocodylidæ.

Affinities.—The general contours of the cranium, the dentition, the presence of large premaxillo-maxillary notches, and the absence of a bony nasal septum are characters that suggest affinities with the genera *Crocodylus* and *Diplocynodon*.

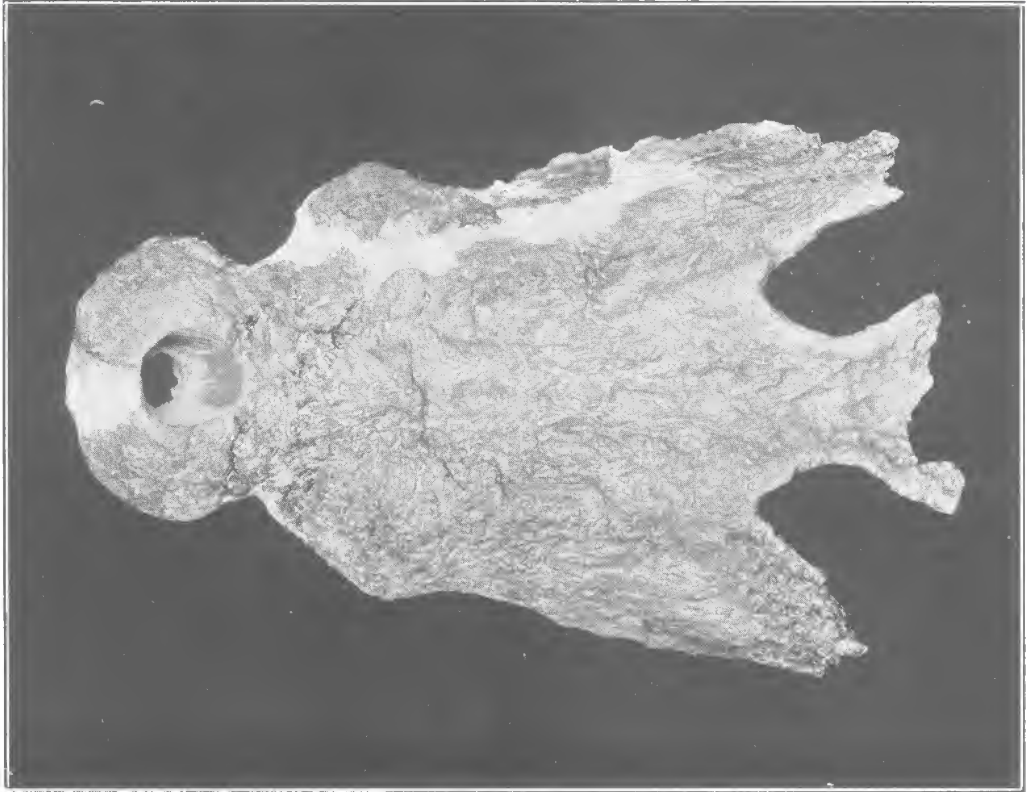


Fig. 1.—*Pallimnarchus pollens*. Superior view of Lansdowne cranium.
One-fourth natural size.



Fig. 2.—*Pallimnarchus pollens*. Lateral view of Lansdowne cranium.

